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PENSOFT

New records of two species of Malvaceae for Brazil: *Sida gracilipes* Rusby and *Sida elliottii* Torr. & A.Gray

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Abstract

New records of species of genus *Sida* (Malvaceae) are reported for Brazil. *Sida elliottii* Torr. & A.Gray var. *elliottii,* of the section *Ellipticifoliae,* is recorded from the state of Paraná; this represents was the first occurrence of any species of this section in Brazil. *Sida gracilipes* Rusby of the section *Nelavagae* is recorded from the state of Mato Grosso do Sul. Illustrations, identification keys to species in Mato Grosso do Sul belonging to the section *Nelavagae*, and comments are provided.

Key words

Conservation; Malvoideae; phytogeography; taxonomy.

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Introduction

The genus *Sida* L. comprises approximately 156 species (The Plant List 2013). These species are broadly distributed around the world but are more common in human-modified areas (Bovini 2016). In Brazil, 94 species have been recorded in various biomes (Bovini 2015). This genus is still poorly known morphologically, being one of the largest of its family, Malvaceae, and therefore, unidentified specimens have accumulated in herbaria. This, in turn, has led to the imprecise estimation of current geographic distributions of many of its species, and several species are still considered endemic to some regions. Among studies on the genus in the Neotropics, Rodrigo (1944), Fuertes (1995), and Krapovickas (2003a, 2003b, 2007, 2014), are the most cited.

Consultations to several Brazilian herbaria in 2011 were made with the aim to find and update collections of Malvaceae. These visits were part of a project coordinated by the Brazilian National Institute of Science and Technology (INCT–virtual herbarium project/CNPq), which allowed me to recognize the first occurrence each in Brazil of 2 species of the genus *Sida*: *S. gracilipes* Rusby and *S. elliottii* Torr. & A. Gray var. *elliottii*.

Methods

Collections of the following herbaria FUEL, HUEM, IPA, MBM, RB, UFP, and UPCB (acronyms follow Thiers 2017) were studied for the identification of Malvaceae during the INCT project/CNPq. Morphological descriptions followed Hickey and King (2000), and more specifically, Fuertes (1996). Illustrations were made with a light chamber adapted to a stereomicroscope, and the map was made in ArcGIS 10.2.2.

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Results

Section Ellipticifoliae

Sida elliottii Torr. & A. Gray var. ***elliottii***

Figure 1

Sida elliottii Torr. & Gray var. *elliottii*, Torrey & Gray (1838): 231 — Fryxell (1993).

Sida gracilis Elliott (1822): 159. Type: USA: South Carolina, near Beaufort, *Elliott s.n.* (holotype CHARL).

Subshrub ca 80 cm tall, erect. Branches puberulous, trichomes stellate and simple. Leaves with petiole ca 1 cm long; blades 1.5–6 × 0.4–0.9 cm, cartaceous, linear or narrowly elliptic, serrate; adaxial surface glabrate and abaxial surface velutinous to pubescent, trichome stellate, some larger. Flowers congest in apex, sometimes axillar. Pedicel up to 1 cm long. Calyx ca 0.7 cm long, trichomes simple, rare stellate; corolla yellow. Schizocarp ca 5 mm in diameter; 10–11 mericarps, ca 4 mm long, spines < 1 mm long, trichomes simple in apical region. Seeds slightly pubescent.

Specimen examined. Brazil. Paraná, Paula Freitas, Carasinho, 07.II.2002, Kranz 781 (FUEL).

Sida elliottii var. *elliottii* was described in 1838 based on a specimen from the United States bearing linear to broadly elliptic leaves, with serrated margins and 7–12 aristate mericarps (Siedo 1999). Later, Chapman (1897) described the variety *parviflora* in Mexico and the Antilles. The species belongs to *Sida* sect. *Ellipticifoliae,* which is close to section *Stenindae*, which has leaves with entire margins and 5–9 mericarps (Fuertes 1995) being *Sida linifolia* Cav. with wide distribution in Brazil. The section *Ellipticifoliae* is recorded for the first time in Brazil after finding this species in the state of Paraná. Thus far, the species was only known in the United States (Fig. 2), occurring in sandy soils, degraded sites, grasslands, and in oak forest in the USA (Siedo 1999). In Brazil, it grows in strongly degraded areas, but since it also occurs in pastureland, it can be considered an invasive species.

It is likely that *S. elliottii* var. *elliottii* was only recently introduced in Brazil since I could find no records in the herbaria noted above or in neighboring areas. It is important to monitor the competition between this and other species of *Sida* already occurring in Brazil, as well as native species. It is believed that the introduction of this species in Brazil was accidental and that the importation of agricultural products from the USA (e.g., wheat or corn), which brought seeds together, may have facilitated its invasion.

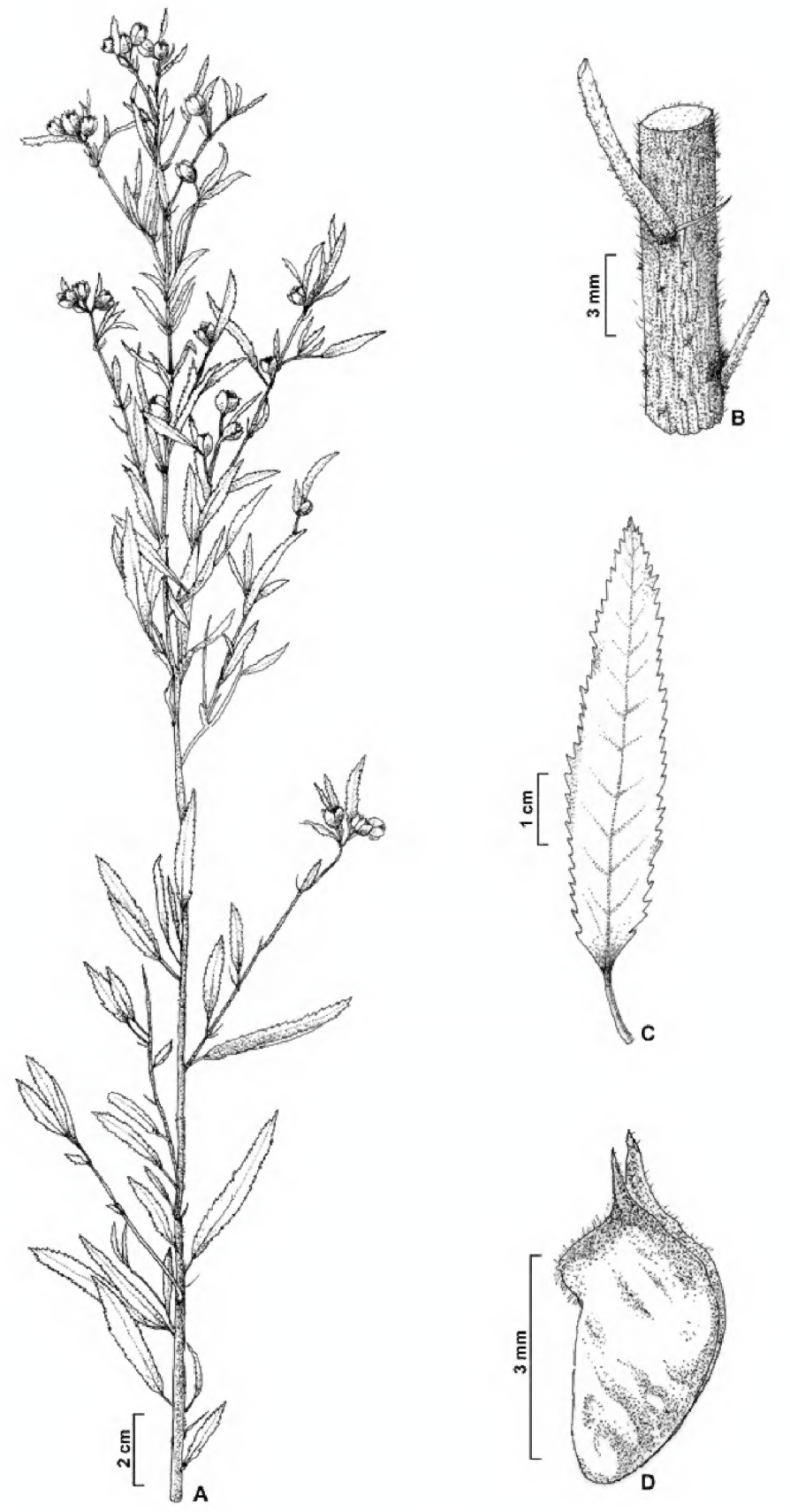

Figure 1. *Sida elliottii* var. *elliottii*. **A.** Branch with flowers and fruits. **B.** Detail of branch. **C.** Leaf. **D.** Mericarp. A–D from *Kranz* 781 (FUEL).

Section Nelavagae

Sida gracilipes Rusby

Sida gracilipes Rusby (1896): 10. Type: Bolivia, Cochabamba, 1891, *Bang 1146* (holotype NY image!, isotype G, US).

Subshrub ca 60 cm tall, erect. Branches puberulous, trichomes stellate, simple, rare glandular, dark when dry. Leaves with petiole ca 0.8 cm long; blades 2.5–3.5 × 1–1.5 cm, membranaceous, ovate, crenate; adaxial surface with stellate trichomes and few simple ones, abaxial surface with spread stellate trichomes. Flowers axillary, sometimes with a little flower same branch. Pedicel 1.5 cm long. Calyx ca 0.9 cm long, trichomes stellate and rare glandular, with simple trichomes along the margins; corolla yellow. Schizocarp ca 4 mm in diameter; 5 mericarps, ca 2 mm long, spines < 1 mm long, glabrous. Seeds slight pubescent apically.

Specimen examined. Brazil. Mato Grosso do Sul, Bonito, assentamento Guaicurus, 16.VI.2006, Silva & Barbosa 4925 (MBM).

Sida gracilipes Rusby is characterized by its calyx about 10 mm in length and mericarps with spines smaller than 1 mm long and belongs to the section *Nelavagae* owing to its cordate leaves, calyx with lobular margin in dark green color, and 5 mericarps. The species was first described in 1896 and recorded only in Bolivia at 1500–2500 m above sea level (Krapovickas 2006). Thus far, the occurrence of

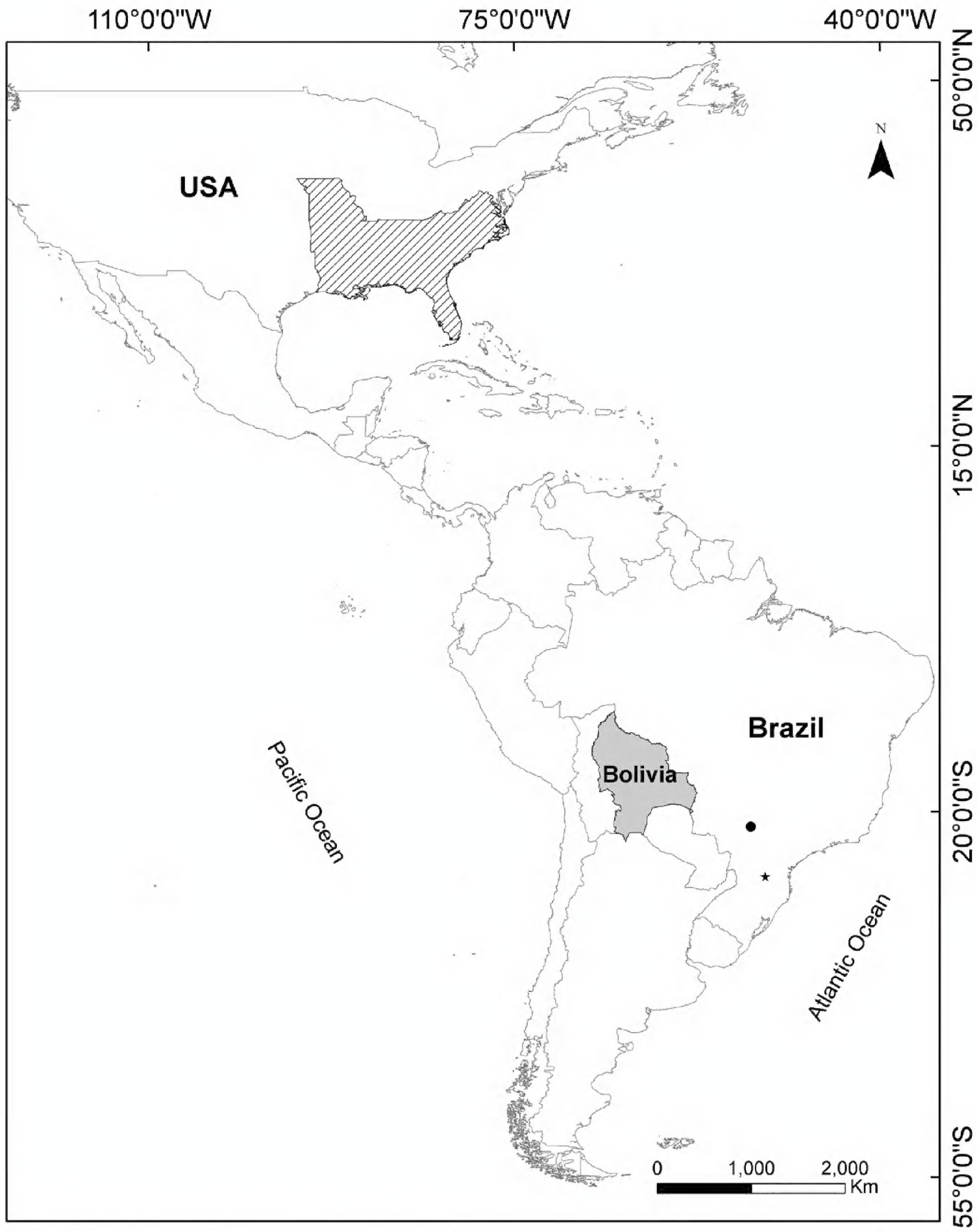

Figure 2. Distribution of *Sida gracilipes* (star) and *Sida elliottii* var. *elliottii* (black dots) in Brazil and the current distribution of *S. elliottii* var. *elliottii* (parallel lines) and *S. gracilipes* (gray). Datum used WGSB4.

this species has only been recorded in Bolivia and Brazil (Fig. 2), often at roadsides and in mixed forest.

The geographic distribution of this species is very similar to that of *Sida rupicola* Hassl. and *S. schininii* Krapov. in Paraguay and Bolivia. These 2 species have already been found in the Brazilian state of Mato Grosso do Sul in the same region of the Pantanal where *Sida gracilipes* was found. I believe that a collecting effort in this region will result in further extension of its distribution in Brazil (Fig. 2). Several new species belonging to *Sida* sect. *Nelavagae* were described within the last 2 decades (Bovini 2001, Fryxell 2009, Krapovickas 2006, 2010, 2012); however, this group of Malvaceae still requires further studies.

So far, the species was found in a barren area, directly threatened by soy crops with an area of occupation (AOO) smaller than 10 km², and therefore this species can be classified in Brazil as Critically Endangered under IUCN criteria B2ab(iii) (IUCN 2016). However, its occurrence is higher in the Bolivian territory, beyond the Brazilian border (pers. obs.).

Key to the species of *Sida* section *Nelavagae* in Mato Grosso do Sul, Brazil

1. Creeping branches.
   2. Leaf to 4 cm long; flowers 1–2, axillary ..... *S. luschnatiana*
   2. Leaf to 8 cm long; flowers arranged in axillary glomerules..... 3
      3. Branches velutinous to hirsute, trichomes stellate, reddish; upper leaf surface covered only with stellate trichomes..... *S. rufescens*
      3. Branches hirsute, trichomes stellate and simple

(ca 3 mm long), hyaline; upper leaf surface with stellate and simple trichomes ..... *S. urens*

1. Erect branches.
    4. Leaf with only stellate trichome on both surfaces; pedicel 1–13 mm long; mericarps aristate (>1 mm long) ..... *S. emilei*
    4. Leaf with stellate and/or simple trichome on the upper surface; pedicel 15–50 mm long; mericarps submuticous (< 1 mm long).
        5. Flowers axillary, solitary, and arranged in paniculiform terminal inflorescences; mericarps rounded.....*S. schinini*
        5. Flowers only axillary, solitary; mericarps trigonous.
            6. Upper leaf surface with simple and often stellate trichomes only on the veins; calyx 4–6 mm long .....*S. rupicola*
            6. Upper leaf surface with stellate and few simple trichomes; calyx 8–11 mm long ..... *S. gracilipes*

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